

REMARKS

Claims 1-5, 8, 10-12, 21 and 23-30 are pending in the application.

Claims 1-5, 8, 10-12, 21 and 23-25 are currently amended. Claims 6, 7, 9, 13-20, and 22 are cancelled. New claims 26-30 are added.

Applicants respectfully submit that no new matter is added to currently amended claims 1-5, 8, 10-12, 21 and 23-25 or to new claims 26-30.

Claims 1-5, 7, and 22-25 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,831,836 to Long et al., hereinafter, Long.

Claims 8-14 and 21 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 6,605,526 B1 to Howell et al., hereinafter, Howell.

Applicants respectfully traverse these rejections based on the following discussion.

I. The Prior Art Rejections

A. The 35 U.S.C §102(b) Rejection as Anticipated by Long

1. The Long Disclosure

Long discloses a semiconductor device package 110 that includes a flexible substrate 112 having an upper patterned insulative layer 114, and a lower patterned conductive layer 116 including a plurality of electrical leads 117. (col. 3, lines 1-5 and Fig. 1). The upper patterned insulative layer 114 does not form a continuous surface, but rather is patterned with voids and planes of different shapes and sizes to provide a combination of conductive regions (encompassing a void through which the conductive layer is accessible) and insulative regions (encompassing a surface which insulates and isolates the conductive layer). (col. 3, lines 32-38 and Fig. 1).

Long also discloses that the patterned conductive layer 116 is patterned to provide electrical leads 117, and, if appropriate, a die attach pad 118. When a die attach pad 118 is present, the upper patterned insulative layer 114 includes a surface 115 which "bridges" between the die attach pad 118 and the electrical leads 117. (col. 3, lines 45-50).

2. Arguments

Currently amended claim 1 recites in relevant part,

"a probe pad region in which a probe mark is located, said probe mark including a visible area of damage; and

an inspection mark including a contour structure that is topographically visible for inspection and that marks a boundary between said wire bond region and said probe pad region".

Long merely discloses a semiconductor device package 110 that includes a rigid upper protective layer and a rigid or semi-rigid lower protective layer that prevent delamination of package layers from electrical leads, and cracking or separation of the leads from the package. (Abstract, lines 7-13 and col. 2, lines 11-14).

Applicants respectfully submit that the Office Action improperly analogizes an inspection mark of the present invention to Element 115 of Fig. 1 of Long, because Long merely describes element 115 as a surface of the insulative layer which "bridges" between the die attach pad and the electrical leads. Although 115 lies between a region of electrical lead attachment and a pad for die attachment, Applicants respectfully argue that the pad for die attachment 118 of Long would not be analogized by one of ordinary skill in the art to the probe pad region of the present invention, where the probe pad region is described as "a probe pad region in which a probe mark is located, said probe mark including a visible area of damage", as recited in currently amended claim 1. There is no structure in Long that is analogous to the probe mark of the present invention.

In addition, nowhere does Long disclose, teach or suggest that contour structure of the inspection mark, which is improperly analogized to element 115 of Long, is topographically visible for inspection. In fact, the potting mixture 130 of Fig. 1 and the lid portion 236 of Fig. 2 of Long would preclude visualization of the element 115 for inspection.

Furthermore, nowhere does Long disclose, teach or suggest "a probe mark including a visible area of damage", as recited in currently amended claim 1, because Long is not interested in inspection of IC structures. Instead, Long merely discloses a semiconductor device package 110 that includes rigid upper protective layer and a rigid or semi-rigid lower protective layer,

which prevent delamination of package layers from electrical leads and cracking or separation of the leads from the package.

For at least the reasons outlined above, Applicants respectfully submit that Long does not disclose, teach or suggest the present invention's features of "a probe pad region in which a probe mark is located, said probe mark including a visible area of damage; and an inspection mark including a contour structure that is topographically visible for inspection and that marks a boundary between said wire bond region and said probe pad region", as recited in currently amended, independent claim 1. Accordingly, Long does not anticipate the subject matter of claim 1 and dependent claims 2-5 under 35 U.S.C. §102(b). The rejection of cancelled claim 7 is moot; while claims 22-25 are currently amended to depend from independent claim 21. Withdrawal of the rejection of claims 1-5, 7, and 22-25 under 35 U.S.C. §102(b) as anticipated by Long is respectfully requested.

B. The 35 U.S.C §102(b) Rejection as Anticipated by Howell

1. The Howell Disclosure

Howell discloses an integrated circuit that includes an insulating/passivating structure 10, in which a portion of a conductive, non-self passivating wire 11 is positioned within the insulating structure 10. (col. 2, lines 40-45).

Howell also discloses that hard insulators 12, 13 are formed over the insulating structure 10 to protect and isolate the underlying wiring 11 and insulation 10. An opening is formed in the hard insulators 12 and 13, and the resulting structure is then immediately covered with a suitable polyamide 14 or other suitable protective barrier. This prevents the wiring 11 from being exposed and prevents corrosion of the wiring 11. (col. 2, lines 46-58).

Howell further discloses that the polyamide 14 remains on the structure until just before a wirebond connection is formed. When the integrated circuit is ready for the wirebond to be formed, the wirebonding process begins with the application of a laser or other energy source 15 to ablate or etch the region of the polymide [*sic*] 14 over the wiring 11. This produces an opening 20, as shown in fig. 2. Immediately, thereafter, a heat capillary 30 is used to press and rub the heated wire bond material 31 against the wiring 11. (col. 2, line 59 to col. 3, line 1).

2. Arguments

Currently amended, independent claim 8 recites in relevant part,

"wherein said topographical contour delineates said portion of said conductive layer visible for inspection into a wire bond region and a probe pad region; and
said probe pad region includes a visible area of damage".

Similarly, currently amended, independent claim 21 recites in relevant part,

"wherein said second topographical contour delineates said portion of said conductive layer visible for inspection into a wire bond region and a probe pad region; and
said probe pad region includes a visible area of damage".

Howell merely describes making an ablative hole in a protective barrier, e.g., a polyamide, to expose an underlying, non-self passivating wire for immediate coverage with a self-passivating, wire bond material, e.g., gold.

Applicants respectfully submit that the Office Action improperly analogizes a wirebond region of the present invention to element 31 of Fig. 3 of Howell, because element 31 entirely fills the ablative opening 20 of Howell and thus, cannot delineate a portion of the conductive layer visible for inspection into a wire bond region and a probe pad region.

Applicants also respectfully submit that the Office Action improperly analogizes a probe pad region of the present invention to the conventional protective pads described in col. 1, lines 21-31, because it is an object of Howell's invention to not use such conventional protective pads. In fact, nowhere does Howell disclose, teach or suggest such protective pads in his invention. Instead, Howell merely describes making an ablative hole in a protective barrier, e.g., a polyamide, to expose an underlying, non-self passivating wire for immediate coverage with a self-passivating wire bond material, e.g., gold. Such protective pads are counter to Howell's invention. Nor are the protective pads described in relative manner to any other elements described by Howell.

Applicants further respectfully submit that the Office Action improperly analogizes an inspection mark of the present invention, which corresponds to said topographical contour of the present invention, to element 20 of Fig. 2 of Howell, because element 20 merely comprises an

ablative opening and does not describe the features of "wherein said topographical contour delineates said portion of said conductive layer visible for inspection into a wire bond region and a probe pad region; and said probe pad region includes a visible area of damage". The ablative opening 20 of Howell does not delineate the opening into two regions, a wire bond region and a probe pad region. Instead, the ablative opening 20 of Howell shows one big hole. Nor does the ablative opening 20 of Howell include a visible area of damage, as recited in claims 8 and 20, because Howell is not inspecting for damage. Instead, Howell merely describes making an ablative hole in a protective barrier, e.g., a polyamide, to expose an underlying, non-self passivating wire for immediate coverage with a self-passivating, wire bond material, e.g., gold.

In addition, nowhere does Howell disclose, teach or suggest that contour structure of the inspection mark, which is improperly analogized to element 20 of Howell, is topographically visible for inspection. In fact, the ablative opening 20 is soon filled with the wire bond material making visual inspection impossible.

For at least the reasons outlined above, Applicants respectfully submit that Howell does not disclose, teach or suggest the present invention's features of "wherein said topographical contour delineates said portion of said conductive layer visible for inspection into a wire bond region and a probe pad region; and said probe pad region includes a visible area of damage", as recited in currently amended, independent claim 8 and similarly recited in currently amended, independent claim 21. Accordingly, Howell does not anticipate the subject matter of claims 8 and 21 and dependent claims 10-12 under 35 U.S.C. §102(b). The rejection of cancelled claims 9, 13, and 14 is moot. Withdrawal of the rejection of claims 8-14 and 21 under 35 U.S.C. §102(b) as anticipated by Howell is respectfully requested.

II. Formal Matters and Conclusion

Claims 1-5, 8, 10-12, 21 and 23-30 are pending in the application.

With respect to the prior art rejections, Applicants respectfully submit that the currently amended claims and the arguments presented therewith overcome the rejections.

In view of the foregoing, Applicants submit that claims 1-5, 8, 10-12, 21 and 23-30 are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 09-0456.

Respectfully submitted,

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